[redacted] SECRET

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CENTRAL INTELLIGENCE AGENCY
WASHINGTON 25, D. C.

IRONBARK

20 JUN 1962

MEMORANDUM FOR: The Director of Central Intelligence

SUBJECT : Chapter X of SECRET Soviet Manual on Atomic Weapons and Antiatomic Protection

1. Enclosed is a verbatim translation of Chapter X of a Soviet SECRET document entitled "A Guide to the Combat Characteristics of Atomic Weapons and to the Means of Antiatomic Protection". It was published in 1957 by the Ministry of Defense, USSR.

2. For convenience of reference by USIB agencies, the codeword IRONBARK has been assigned to this series of TOP SECRET CSDB reports containing documentary Soviet material. The word IRONBARK is classified CONFIDENTIAL and is to be used only among persons authorized to read and handle this material.

3. In the interests of protecting our source, IRONBARK should be handled on a need-to-know basis within your office. Requests for extra copies of this report or for utilization of any part of this document in any other form should be addressed to the originating office.

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Richard Helms
Deputy Director (Plans)

Enclosure

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Original: The Director of Central Intelligence

cc: The Director of Intelligence and Research,
Department of State

The Director, Defense Intelligence Agency

The Director for Intelligence,
The Joint Staff

The Assistant Chief of Staff for Intelligence,
Department of the Army

The Director of Naval Intelligence
Department of the Navy

The Assistant Chief of Staff, Intelligence
U. S. Air Force

The Director, National Security Agency

Director, Division of Intelligence
Atomic Energy Commission

National Indications Center

Chairman, Guided Missiles and Astronautics
Intelligence Committee

Deputy Director for Research

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Assistant Director for Current Intelligence

Assistant Director for Research and Reports

Assistant Director for Scientific Intelligence

Director, National Photographic Interpretation Center

[redacted]

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CSDB 3/650,015

COUNTRY : USSR

SUBJECT : Soviet Manual on Atomic Weapons and Anti-atomic Protection (Chapter X)

DATE OF INFO: 1957

APPRAISAL OF CONTENT : Documentary

SOURCE : A reliable source (B).

Following is a verbatim translation of Chapter X of a Soviet SECRET document titled "A Guide to the Combat Characteristics of Atomic Weapons and to the Means of Antiatomic Protection." This manual was published in 1957 by the USSR Ministry of Defense as a replacement for a similar 1954 manual (CSDB-35586), and is referenced in the Information Collection of the Artillery (cf. CSDB-3/649,649). It had not been superseded as of late 1961. A similar, more general document was also published by the 6th Directorate of the Ministry of Defense in 1959 (CSDB-3/649,686). To expedite dissemination, each chapter of this manual will be published separately as it becomes available and is translated. The Table of Contents and Chapter VIII of this manual were disseminated in CSDB-3/650,395.

[redacted]

CSDB-3/650,015

Chapter X

Radiation Reconnaissance and Dosimetric Apparatus

35. Tasks and Means of Radiation Reconnaissance

Radiation reconnaissance is charged with:

-- prompt detection of radioactive contamination of terrain and warning troops of the presence of contamination;

-- determination of radiation levels in contaminated sectors, principally in areas occupied by troops;

-- establishment and marking of the boundaries of contaminated areas and the most heavily contaminated sectors within them, and also the location of detours or routes for crossing contaminated sectors;

-- determination of the nature of radioactive contamination (ratio of beta and gamma radiation and the state of the radioactive materials - dust, slag, droplets);

-- monitoring of changes in the radiation levels in the contaminated area.

Radiation reconnaissance is conducted:

-- by observation subunits, observation posts and reconnaissance subunits of all arms of troops and special troops, equipped with dosimetric instruments and trained in their use;

-- by chemical observation posts;

-- by chemical reconnaissance patrols;

-- and by chemical scouts and specially trained enlisted men and NCOs in the subunits assigned to reconnaissance, security and traffic control detachments.

[redacted]

Chemical reconnaissance patrols operate on foot, in trucks, armored personnel carriers, tanks and aircraft. Chemical reconnaissance foot patrols are used generally for the conduct of radiation reconnaissance in trenches, connecting trenches, slit trenches, and other installations and also for scouting sectors contaminated with low levels of radiation on terrain inaccessible to armored personnel carriers and tanks. In all other cases patrols operate, as a rule, in armored personnel carriers and trucks. Patrols in tanks may be sent to reconnoiter areas with high radiation levels, and areas under enemy fire.

Patrols in aircraft (or helicopters) are sent to clarify the radiation situation in the area (zone) of troop operations and to reconnoiter routes of march.

A zone 600 to 1000 meters wide is ordinarily assigned to a patrol for the reconnaissance of areas or sectors of radioactive contamination.

The personnel, equipment and the tasks allotted to observers, posts, and patrols are presented in Table 140.

Table 140

Tasks of Radiation Reconnaissance Fulfilled by Observation Subunits, Observation Posts, Chemical Observer Posts and Reconnaissance Patrols *

Name	Tasks	Personnel	Equipment
Observation posts and observers from subunits	Prompt detection of radioactive contamination		Radiation indicator or roentgenometer
Chemical Observation posts.	1. Prompt detection of radioactive contamination in a given area 2. Measurement of radiation levels and, if necessary, marking off of the contaminated sector	Up to squads of chemical reconnaissance	Radioactive indicator, roentgenometer, and warning signs

(Table continued on next page)

Table 140 (continued)

Chemical reconnaissance patrols	1. Reconnaissance of terrain in areas of troop operations or disposition in order to detect radioactive contamination 2. Reconnaissance in contaminated sectors or areas of atomic bursts (measurement of radiation levels, determination of the nature of contamination, boundary delineation, locating detours or crossing routes) 3. Checking for changes in radiation levels in earlier reconnoitered contaminated areas	Up to squads of chemical reconnaissance	Radioactive indicator, roentgenometer, radiometer,** and warning signs
Chemical scouts in subunits assigned to reconnaissance, security or traffic control detachments	1. Detection of contaminated sectors and determination of radiation levels in them		Indicators of radioactivity, roentgenometers, and warning signs

(Table continued on next page)

Table 140 (continued)

2. Designation of contaminated sectors on the axis of subunit operations	
3. Locating detours around contaminated sectors or regions with high radiation levels	

* Specially trained tank crews are used for patrols in tanks, and specially trained members of an aircraft crew or officers of the chemical service are used as reconnaissance personnel in aircraft (or helicopters).

** A patrol in a tank is equipped, as a rule, only with a roentgenometer; a patrol in an aircraft (or helicopter) with a roentgenometer and radiometer.

Warning signs (Figure 153), as a rule, designate:

-- the boundaries of contaminated areas with radiation levels of 0.5r/hr;

-- the boundaries of sectors with heavy contamination according to the radiation levels set by the commander who dispatched the patrol; the radiation levels are set in accordance with the situation;

-- the radiation levels in places of prolonged operations by personnel;

-- the routes of detours and crossings of contaminated areas.

Signs are placed at water sources on contaminated terrain to prohibit use of the water.

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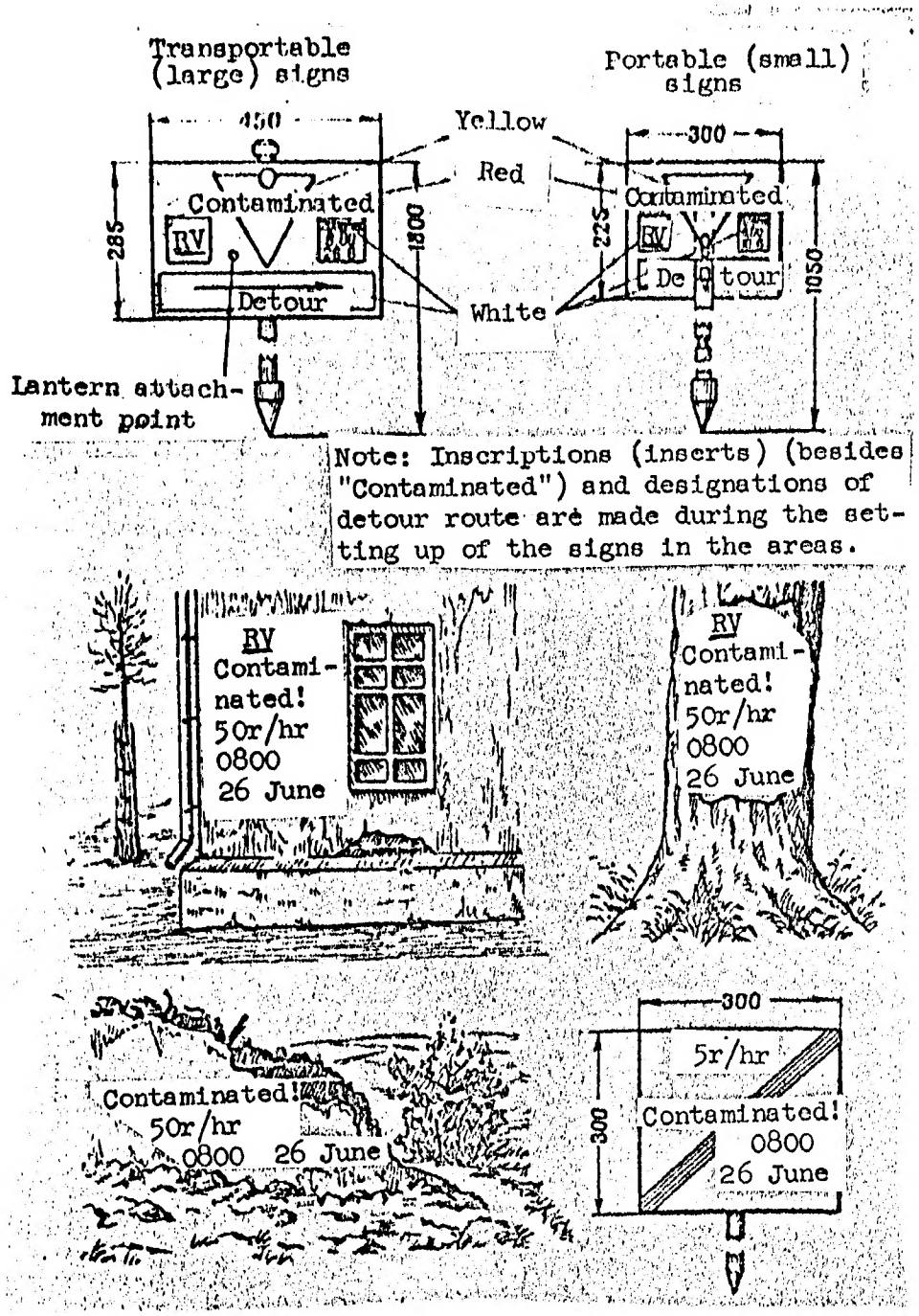

Translator's Note: The letters "RV" stand for "radioactive material."

Figure 153. Authorized Warning Signs (two upper figures) and Means of Marking Contaminated Sectors in the Absence of Authorized Signs.

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The specific duties of chemical reconnaissance patrols during radiation reconnaissance of roads, (routes of march and axes of troop operations), the areas of atomic bursts, the wake of a radioactive cloud, etc, are shown in Table 141.

Table 141

Specific Duties of Chemical Reconnaissance Patrols When Conducting Radiation Reconnaissance

Missions	Patrol Duties
Reconnoiter roads, (routes of march, axes of operations)	Reconnaissance will be conducted without dismounting from the armored personnel carrier (vehicle). The patrol, moving in the prescribed direction, locates and marks off the forward and rear boundaries of the contaminated area, as well as sectors with maximum radiation levels. After detection of contamination, the patrol, when necessary, locates a detour, or where a detour is impossible, a crossing route with the lowest radiation level. In all cases the routes for crossing contaminated sectors must not have radiation levels higher than 200r/hr.
Reconnoiter the area of an atomic burst	The area of an atomic burst is reconnoitered by several chemical reconnaissance patrols, which may operate either on separate axes or within zones with prescribed radiation levels. Patrols, along their own axes, determine and mark the boundaries of contaminated areas according to the prescribed radiation levels (usually 0.5, 50 and 200r/hr), after which they return to the assembly point (Figure 154).

(Table continued on next page)

Table 141 (continued)

Reconnaissance of the wake of a radioactive cloud, or of sectors contaminated with radioactive material.	When reconnoitering the area of an atomic burst along the boundaries of the zones of radiation levels, the patrols determine and mark the outer boundaries of the contaminated and heavily contaminated zones (Figure 155). To determine the nature of changes in radiation levels, one of the patrols crosses the burst area. A tank patrol is ordinarily used for this purpose. When crossing a burst area in an armored personnel carrier, sectors with radiation levels higher than 200r/hr are by-passed. The patrol is assigned a route or zone 600 to 1000 meters wide. Reaching a boundary with a radiation level of 0.5r/hr the patrol moves along this line for the whole width of the reconnaissance zone and marks it, then it moves along a designated route of march through the contaminated sector, determining the radiation level and marking the rear areas of the contaminated area. The radiation levels of heavily contaminated areas, as a rule, are marked only along the patrol's line of march through the contaminated sector (Figure 156,a). In some cases the patrol may be given the task of marking completely the boundaries of heavily contaminated sectors in its zone of operations (Figure 156,b). The configuration and dimensions of the track of a radioactive cloud, as well as the sectors heavily contaminated by it, may be determined as a result of the operations of a series of chemical reconnaissance patrols.

(Table continued on next page)

Table 141 (continued)

Reconnaissance of an area designated for troop disposition or operations	The patrol traverses the area along a designated route. On discovering contamination, the patrol, depending on the mission, conducts reconnaissance only on its route of movement or wholly within the boundaries of the area. In the latter case, the patrol operates the same as in reconnaissance of the wake of a radioactive cloud.

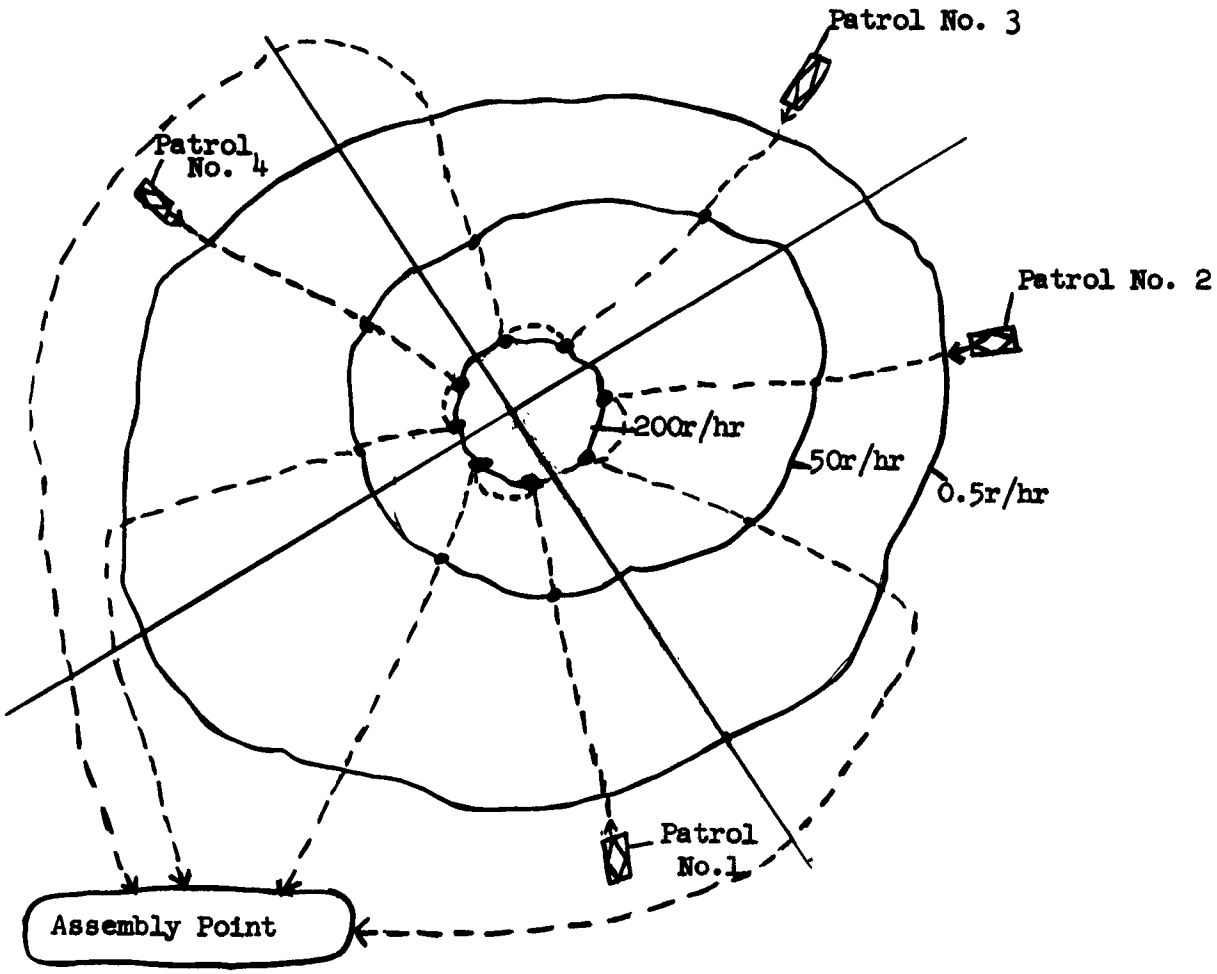

Figure 154. Operations of Chemical Reconnaissance Patrols During Reconnaissance of the Area of an Atomic Burst Along Axes

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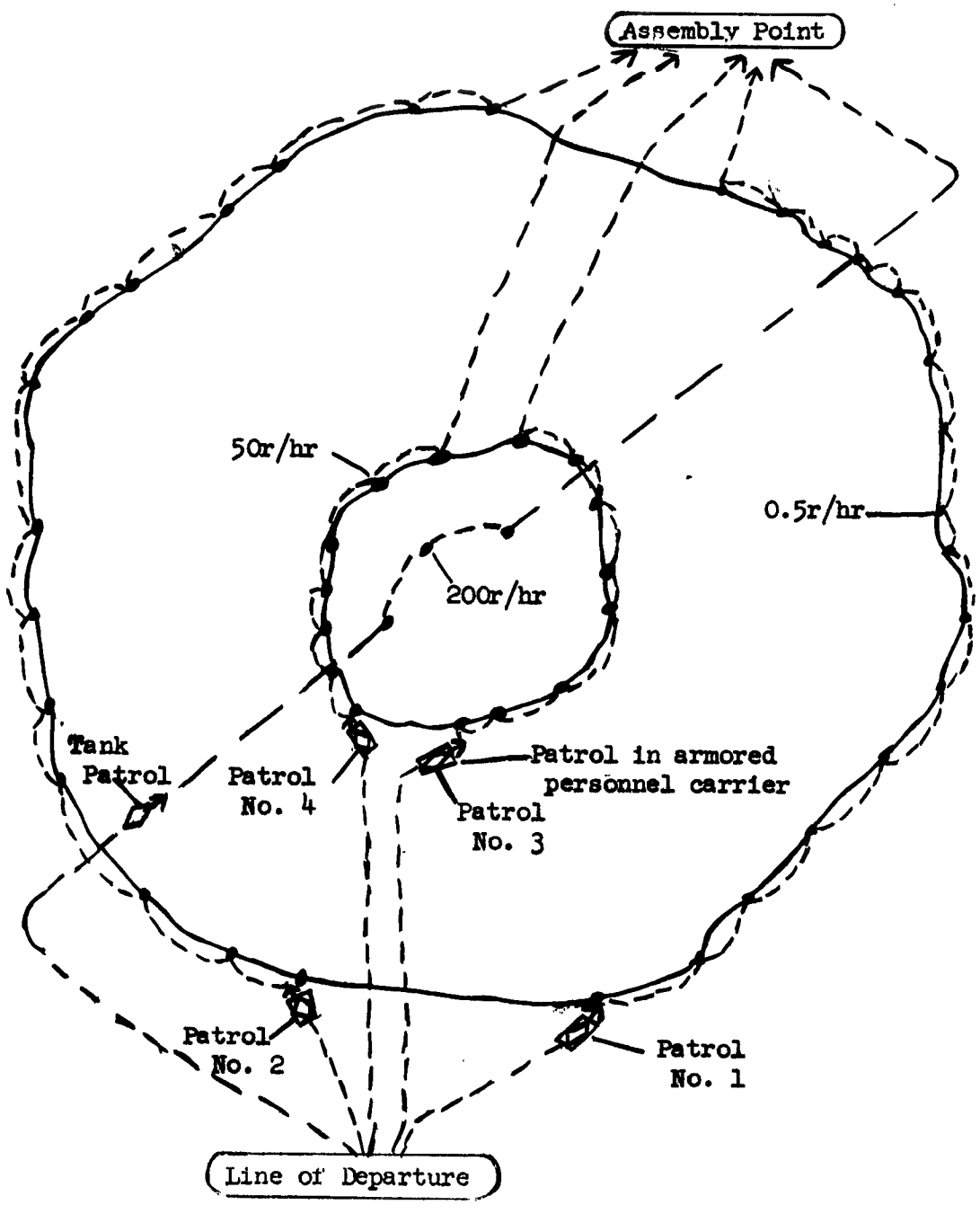

Figure 155. Operation of Chemical Reconnaissance Patrols During Reconnaissance of the Area of an Atomic Burst by Specific Levels of Radiation Corresponding to 0.5 and 50r/hr.

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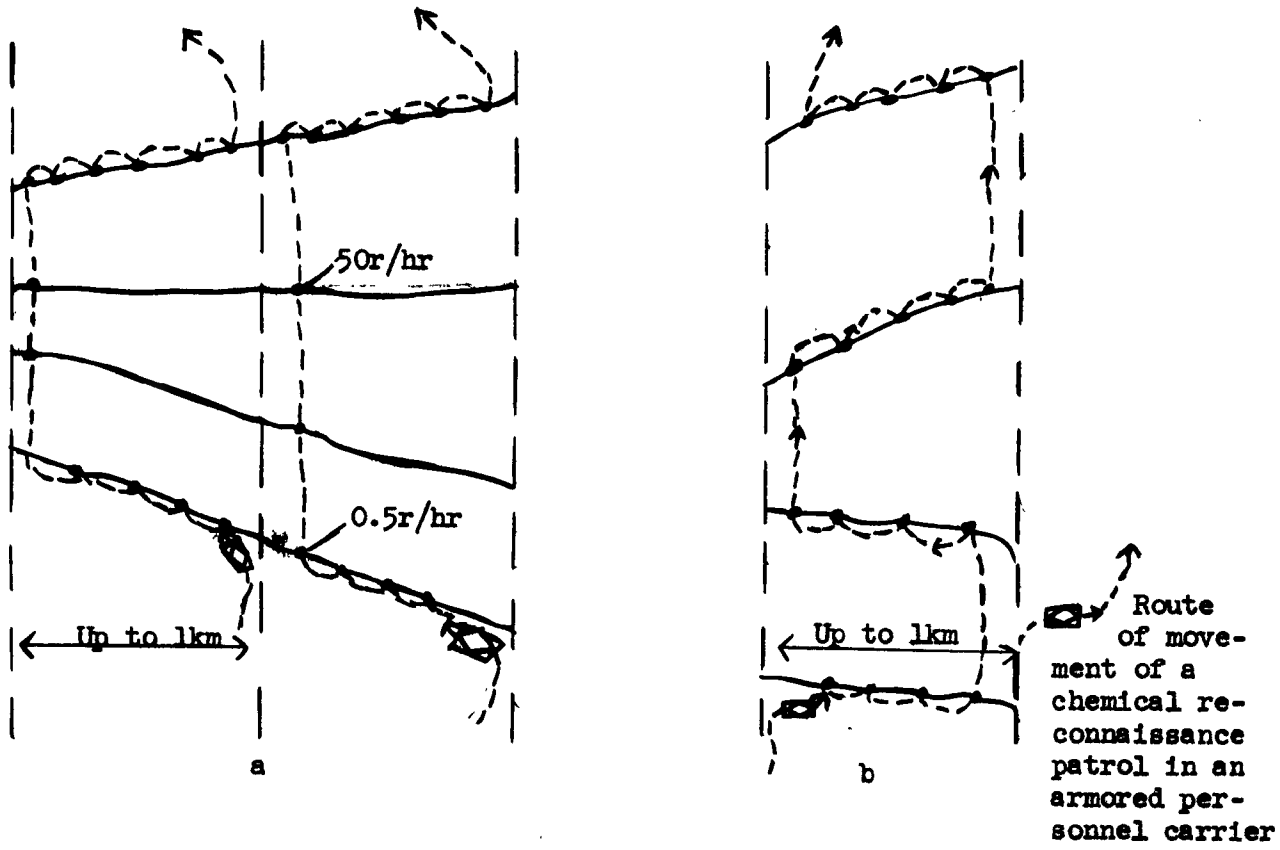

Figure 156. Operations of Chemical Reconnaissance Patrols During Reconnaissance of the Wake of a Radioactive Cloud (Sector Contaminated with Radioactive Materials).

Operating and Reporting Documentation for Chemical Observation Posts and Chemical Reconnaissance Patrols, Personnel Irradiation Record

At chemical observation posts, the chiefs of the posts maintain the observation journals in which are recorded the results of observation or reconnaissance of contaminated sectors.

[redacted]

Journal of Chemical Observation Post No. 175

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Observation Point	Time of Observation	Place of Observation	Event Observed	To Whom and When reported
		15 June 19__		
Spot elevation 159.2	0700	Reference point No. 2, closer than 100m.	Air bursts of rockets (reaktivnaya mina)	Chief of the chemical service of the regiment at 0705
As above	0705	Western slope of elevation 159.2	Air bursts of aviation bombs. West and northwest slopes of hill contaminated with radioactive material; radiation level 10 to 15r/hr	As above at 0715

Chemical scouts of chemical reconnaissance patrols or those detailed to reconnaissance, security, and traffic control detachments record data on radiation level changes on cards.

(Form)

Chemical Scout Card

Sergeant Petrov
(rank, surname)

Date of reconnaissance 3 May 19__
(day, month, year)

Type of instrument DP-1-A (Ye-513245)
(name and factory number)

No.	Place or Object of Reconnaissance	Time of measurement		Sub-band	Instrument Reading	Radiation levels in r/hr	Difference in instrument readings (with open and closed lid)
		Hr.	Min.				
	Sample Entry						
1	Road fork 500m north of Lebyazhye farm	10	30	2	0.05	0.5	None

On conclusion of reconnaissance the chief of the chemical reconnaissance patrol compiles a sketch-report (Figure 157) for the commanding officer who dispatched the patrol.

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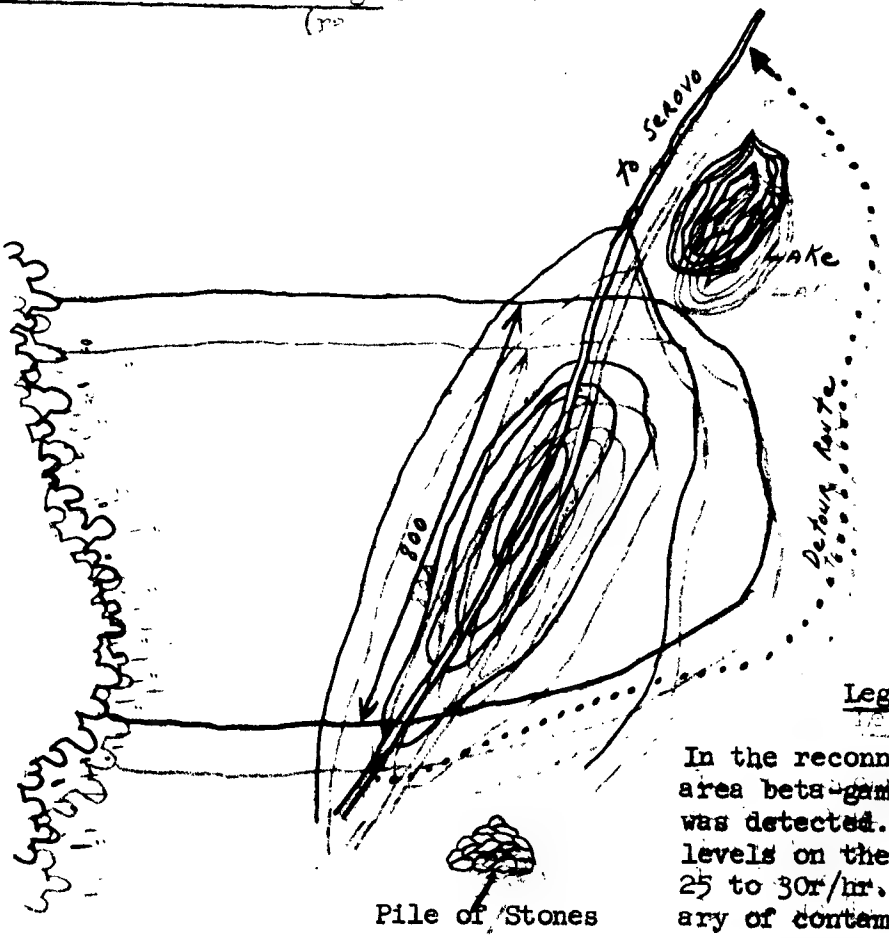
To Sidorov
(surname of commander)

Dispatch time 1430 hrs 12 July
(hour, minutes, date, month, year)

Origin bushes, north of nameless lake (2175)
(dispatch point)

From Sergeant Petrov
(rank, surname)



Legend

In the reconnaissance area beta-gamma radiation was detected. Contamination levels on the road were 25 to 30r/hr. Left boundary of contaminated sector not established. Boundaries of the contaminated sector marked off with authorized signs.

Chief of the patrol
Sergeant Petrov

Figure 157. Sketch-Report of a Chemical Reconnaissance Patrol

In the legend of the sketch-report, as a rule, the following are noted:

-- the presence of radioactive materials on the surface of the ground;

-- the means by which the boundaries of the contaminated sectors are marked with the prescribed radiation levels;

-- the nature of the terrain in the contaminated area (terrain passability, condition of the roads, nature of the soil and vegetative cover);

-- the samples forwarded (water, rations).

Radiation doses sustained by personnel during operations on contaminated terrain are recorded in the radiation record journal in which the commander of the subunit keeps radiation control data.

(Form)

Personnel Radiation Record Journal

1st Rifle Co., 57th Rifle Regiment
(Unit, Subunit)

No.	Rank, surname, initials	Chamber number	Kind of work	Dose sustained, in roentgens	Total dose, including that sustained earlier, in roentgens	Remarks
			15 June			
1	Sergeant Stepanov, I.A.	175	Radiation reconnaissance	7	15	-

36. Methods for Measuring Radiation Levels, for Taking Samples of Water and Rations and for Determining the Degree of Contamination of Sample[redacted]50X1-HUM Under Field Conditions.

[redacted]

Measurement of radiation levels is made with a roentgenometer with the lid on the bottom of the case closed, at a height of 70 to 100cm from ground level.

In areas where personnel remain for long periods (slit trenches, trenches, and other installations) the radiation levels ought to be measured at various heights above the ground or floor.

On open terrain it is necessary to measure the radiation levels at a distance not less than 10 to 15 meters from local features (buildings, woods, etc) in order to avoid their screening effects.

When conducting radiation reconnaissance from a truck, armored personnel carrier or tank it is necessary to multiply the dosimetric instrument readings by the radiation attenuation coefficients calculated for the material in the body of the vehicles (Table 142).

Table 142

Values of Radiation Attenuation Coefficients Calculated for the Materials in the Body of Vehicles

Type of Equipment	Attenuation coefficient of gamma radiation
Automobile	2
Armored personnel carrier	4
Tank	10

Note: When conducting radiation reconnaissance, it is necessary periodically to recheck the gamma radiation attenuation coefficient, by comparison of instrument readings in a vehicle (armored personnel carrier, tank) with instrument readings in the same place outside a vehicle (armored personnel carrier, tank).

When conducting radiation reconnaissance from the air, the patrol in the aircraft (helicopter) roughly determines the boundaries of contamination by flying over the area at a constant minimum possible height (50 to 200m).

For the rough determination of radiation levels on terrain, it is necessary to multiply the instrument readings in the aircraft by a coefficient given in Table 143.

Table 143

Values of Gamma Radiation Attenuation Coefficients for Aircraft

Measurement of altitude in meters	Attenuation Coefficient Values		
	In the area of an atomic burst within the first 2 or 3 days after the burst	Along the Wake of the Cloud	
		On the day of burst	One or more days after the burst
50	10	2.5	2
100	20	4	5
150	70	5	10
200	100	7	15

Note: For making accurate determinations of radiation levels in sectors especially important for troops, the aircraft (helicopter) may land in the contaminated area.

The presence of radioactive materials on terrain is determined by a roentgenometer from two measurements at a height of 10 to 15cm from ground level, one with the lid on the bottom of the instrument case closed, and the other with the lid open. In the presence of radioactive materials in an area, the instrument readings with the lid open will be larger than with the lid closed. On the basis of the difference in instrument readings with closed and open lid it is possible to estimate the gamma and beta radiation ratio.

Reconnaissance of terrain after the discovery of radioactive contamination, is conducted as a rule with a continuously operating roentgenometer.

[redacted]

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The sampling order for water, rations, forage and taking swabbings from the internal surfaces of defense installations is presented in Table 144.

Table 144

Sampling Method for Water, Rations, Forage and Taking Swabbings from the Internal Surfaces of Defense Installations

Sample	Sampling Method	Volume (Weight) of Sample	Technical Means by Which Samples are Collected
Water	Sample is taken from surface of water source and from the bottom (before taking the sample from the bottom the water is stirred).	Not less than 0.5 liters.	From the surface- with a bucket, cup, or other clean container From the bottom- a weighted bottle or water samplers (see Figure 158)
Rations. Grain products (groats, flour, grain and the like)	Tear open a bag and take a layer of the product immediately under the covering, not more than 1cm thick. When grain products are stored in a pile, take a sample from 3 or 4 places on the surface of the most contaminated layer of the product so that the thickness of the collected layer does not exceed 1cm.	Not less than a match box	Scoop, entrenching tool, spoon, probe

(Table continued on next page)

Table 144 (continued)

Meat, fish, sausage, cheese, fresh butter and solid fats.	Take a contaminated layer up to 0.5cm thick		Knife, scraper, wire
Liquid products (vegetable oil, vodka, and others)	Before taking samples the whole mass of liquid is thoroughly shaken (or stirred)	Not less than 0.5 liters	Jar, measure siphon, etc.
Fresh vegetables and fruit	Take several pieces of fruit next to the contaminated surface of the container or peel the top, contaminated layer of the fruit to a thickness of 0.5cm	2 or 3 fruits (top contaminated layer from 2 or 3 pieces of fruit)	Knife, scraper
Hard tack, concentrates, baked goods, dried vegetables, fruits, etc, in heavy boxes	Take the surface layer of the product directly adjacent to the contaminated wall of the box	50g	Scoop, spoon
Hay	Select bales located in the most contaminated layer of the stack. Samples are taken from the bales broken open from the surface layer. With hay stored in stacks and piles, samples are taken from various places on the top, most contaminated layer of hay.	From one bale (place), 0.1 to 0.3kg of hay	

(Table continued on next page)

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Table 144 (continued)

Rations and forage stored in stacks and bales	With a dosimetric instrument or, on the basis of external evidence (largest quantity of particles of radioactive material) determine the most contaminated part of the stack (bale). From various places in this area take 1 or 2% of the upper boxes (sacks, bales). Second and third samples are taken respectively from the middle and lower layers of the stacks (bales). Boxes (sacks, bales) are broken open and samples are taken from them by one of the means described above.		
Internal surfaces of installations	Radioactive materials are collected with a swab from contaminated surfaces defined by a template. The sequence of taking a sample is shown in Figure 159. After taking the sample the swab is placed in a bottle or envelope made of heavy paper.	A swabbing is taken from a 150cm^2 surface	The template is made of cardboard or heavy paper with a rectangular outline 10 x 15cm. The swab is made of bandages, absorbent cotton or rags.

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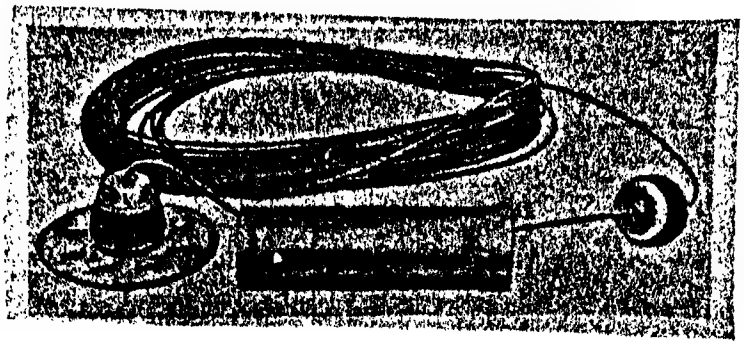

Figure 158. Water Sampler

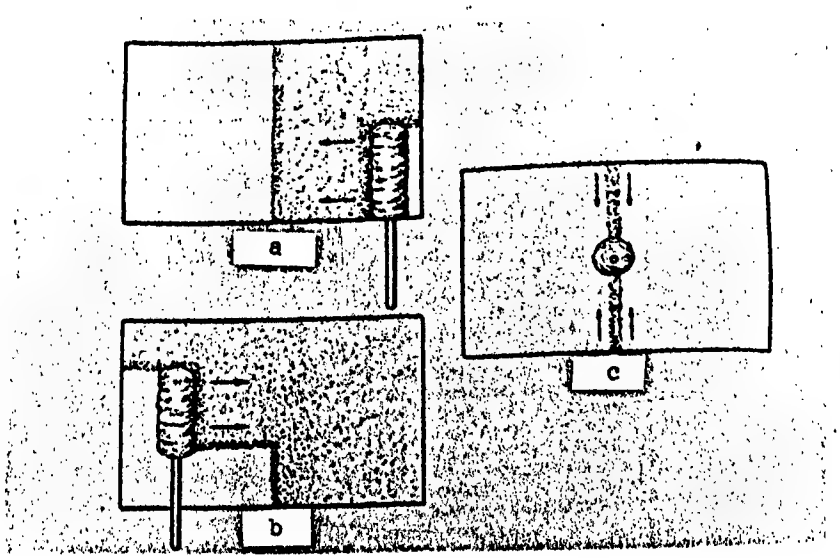

Figure 159. Taking swabbings. Radioactive dust is collected with a swab first from one half of the area 'a' and then from the other 'b'. The material, remaining in a narrow strip, is collected with the swab, sweeping it from the upper and lower edges of the area to the center. The material, now collected in the center of the area, is taken up with the tip of the swab 'c'.

The measurement of contamination of sample is conducted, as a rule, in uncontaminated areas. In a contaminated area, measurement is possible only in uncontaminated installations (shelters).

The means of determining the degree of contamination of samples and swabbings with dosimetric instruments in field conditions are given in Table 145.

Table 145

Determination of the Degree of Contamination of Samples and Swabbings with Dosimetric Instruments under Field Conditions

Type of Sample (Swabbing)	Means of determining the degree of contamination
Water	1. The filter-cardboard from the chemical reconnaissance kit (PKhR-46, PKhR-54) is used to measure contamination. The filter-cardboard is lowered into the test water for 30 seconds. After draining off (about 5 seconds) the excess water, the probe head of the radiometer with open window is brought to within about 0.5 to 1cm of the filter-cardboard. The measurement results are multiplied by a factor of 15 and recorded as the degree of contamination of the water in emissions per minute per cm^3. With the use of newspaper (of the same dimensions as the filter-cardboard) the correction factor is 100. 2. Immersion of the instrument probe head (with open window and protected by a thin rubber case) into the sample to a depth of not less than 10cm. The DP-11-A instrument readings, in that case, are multiplied by 10, and those of instrument DP-11-B, by 5.

(Table continued on next page)

Table 145 (continued)

	3. For direct measurements from the surface of the water, pour water into a cylindrical container at least 8 to 10cm wide and 3 to 4cm tall. The probe head should be 0.5 to 1.0cm from the surface of the water during measurement.
Rations	For measurement of contaminated samples having the dimensions and volume of a matchbox, the degree of contamination is determined by multiplying the measurement readings by a factor of 9.
Rooms	For direct measurement of contamination of a swab, spread it out, contaminated side up, on a surface equal in area to that from which the swabbing was taken.

37. Function and Tactical-Technical Specifications of Field Dosimetric Apparatus

A field radiation apparatus is used to detect radioactive contamination, to determine the radiation level on terrain, and to measure the degree of radioactive contamination of water, rations, soil and the surfaces of various objects (uniforms, weapons, combat equipment, vehicles, etc), and also for personnel radiation control,as well as for checking the effectiveness of sanitary processing and decontamination.

Field dosimetric apparatus is classified as follows:

-- indicators;

-- roentgenometers;

-- radiometers;

-- dosimeters.

Radioactivity Indicator DP-62 (Figure 160)

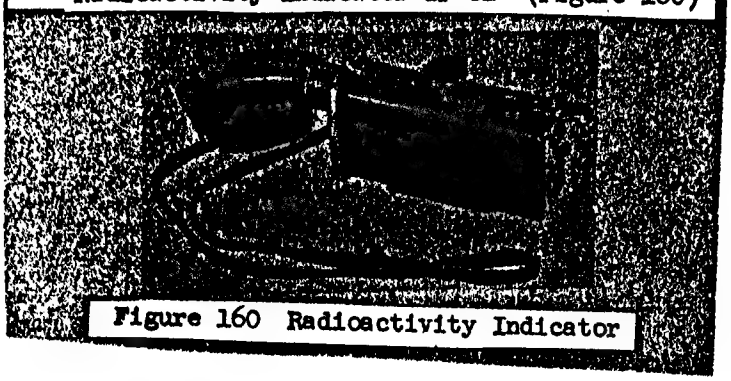

Figure 160 Radioactivity Indicator

Purpose	Detection of beta-gamma-active substances on the terrain and the rough determination of boundaries of contamination (0.5r/hr).
Basic parts	Sensing unit (counter, type STS-5), stepup transformer with voltage stabilizer and registration unit (neon tube).
Measurement range	Infrequent, evenly spaced flashes of the neon tube correspond to a dose strength of approximately 0.02r/hr, but continuous illumination, to about 0.4 to 1.0r/hr or more.
Power supply	Alternating-current hand generator producing a 3- to 4-volt current.
Dimensions	240 x 90 x 40mm
Weight	0.9kg

Roentgenometer DP-1-B (Figure 161)

Purpose	Measurement of gamma-radiation level or total beta-gamma radiation.
Basic parts	Sensing unit (ionization chamber), direct-current amplifier and registration instrument (microammeter).

Figure 161. Roentgenometer DP-1-B

Measurement range	From 0.02 to 400r/hr. The instrument scale is subdivided into 4 subbands; I -- from 0.02 to 0.04r/hr; II -- from 0.2 to 4.0r/hr; III -- from 2.0 to 40r/hr; IV -- from 20.0 to 400r/hr. The measurement error in normal conditions (at a temperature of 20° and at standard pressure) does not exceed 20 to 30%.
Power supply	Dry cells and batteries: one each 1.6 PMTs-8, 105PMTsG-0.05 and 13AMTsG-0.5.
Period of operation without change of batteries	50 hours
Weight	5.3kg
Dimensions	303 x 162 x 215mm
Set-up time	3 to 5 minutes

Note: Roentgenometer DP-1-B differs from roentgenometer DP-1-A in that the DP-1-B has an improved ionization chamber, requires less power supply and a two-fold smaller lower limit in all subbands.

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Beta-gamma radiometer DP-11B (Figure 162)

Purpose	Measurement of the degree of contamination of the surfaces of objects, water, rations, and forage by radioactive substances. Used also for the detection of radioactive contamination of terrain from aircraft

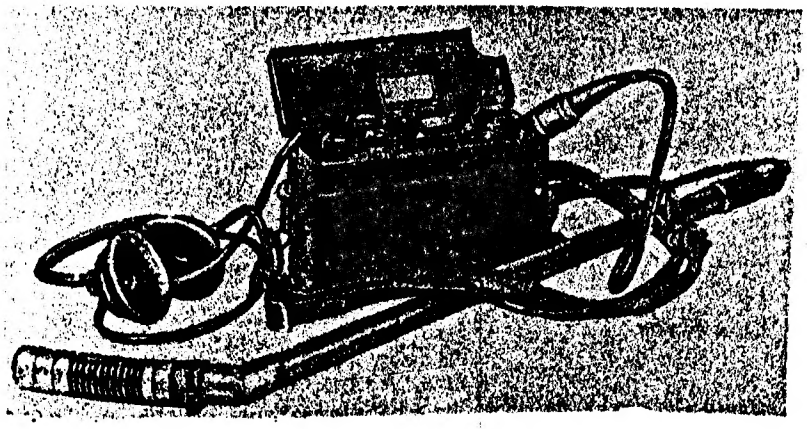

Figure 162. Beta-gamma-radiometer DP-11B

Basic parts	Probe with handle, inside which are a gas counter, type STS-5, amplifier and high-voltage generator. Control box with registration unit (microammeter) and power supply, Headphones.
Measurement range	Degree of contamination within limits from 150 to 1,000,000 emissions per minute per square centimeter; radiation levels within the limits 0.03 to 20mr/hr. Measurement range for the degree of contamination is divided into two subbands: I -- from 150 to 20,000 emissions/min cm^2 and from 0.03 to 0.4mr/hr; II -- from 1500 to 1,000,000 emissions/min/cm^2 and from 0.3 to 20mr/hr. The measurement error for degree of contamination is about 50%.
Power supply	Dry cells and batteries: two 1.6PMTs-8 and one [redacted] 87PMTsG-0.15.

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Weight	About 5.4kg
Dimensions	Length of probe with handle, about 1 meter, diameter 35mm. Control box dimensions: 260 x 115 x 175mm.
Set-up time	2 to 3 minutes

Note: Beta-gamma-radiometer DP-11-A, produced commercially up to 1954, had these measurement ranges:

-- radiation level -- from 0.02 to 30mr/hr;

-- degree of contamination -- from 35 to 50,000 emissions/min/cm^2.

Individual lots of these instruments have had measurement ranges for degree of contamination from 50 to 600,000 emissions/min/cm^2.

Individual Radiation Control Kit, Type DP-21-B (Figure 163)

Purpose	Individual radiation control for personnel operating in contaminated terrain.
Basic parts	200 miniature ionization chambers and a charge-measurement unit.
Measurement range	There are two subbands: I -- from 0 to 5r; II -- from 0 to 50r. Measurement error - not more than 20%.
Power supply (for charge-measurement unit)	Dry cells and batteries: one 1.6PMTs-8, two 13AMTsG-0.5, and three 105PMTsG-0.05
Period of operating without changing batteries	75 hours
Weight	Charge-measurement unit - about 13.0kg. Kit of 200 dosimeters packed in box - 7kg. Single chamber - 15 grams.

[redacted]

GROUP 1
Excluded from automatic downgrading and declassification

Dimensions	Charge-measurement unit 300 x 250 x 295mm. Ionization chamber - length 120mm, diameter 13mm.
Set-up time	3 minutes

Note: Dosimetric control kit DP-21-B differs from DP-21-A only in the power sources.

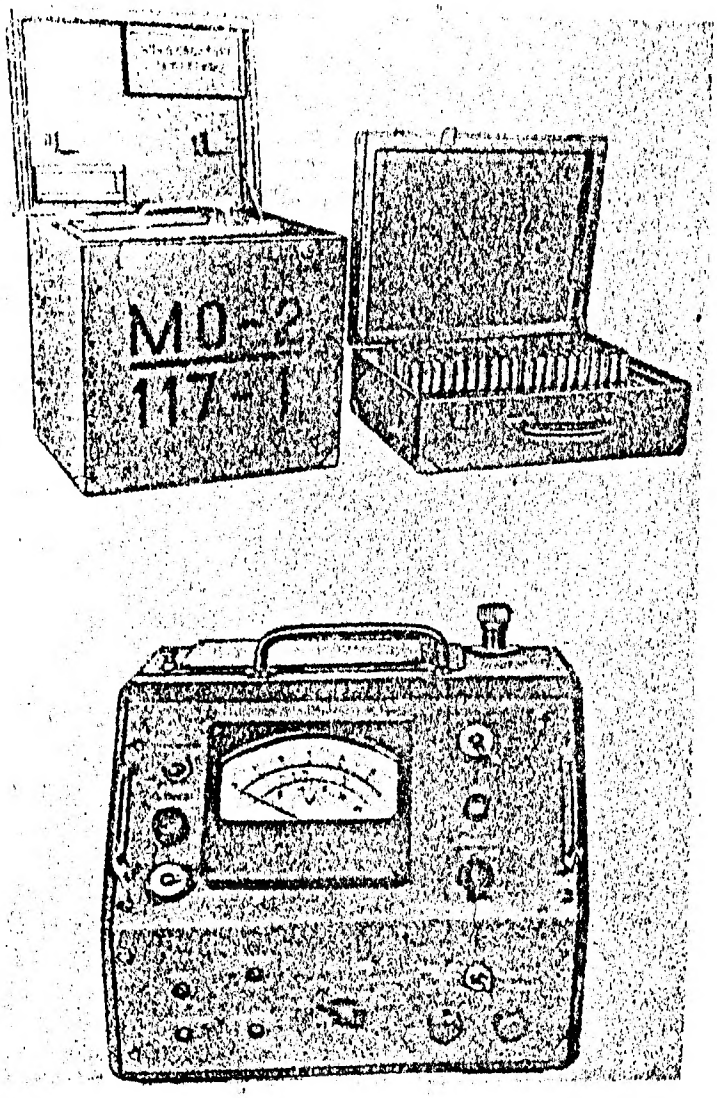

Figure 163. Individual Radiation Control Kit Type DP-21-B [redacted]